COMMONWEALTH of VIRGINIA

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

DEPARTMENT OF ENVIRONMENTAL QUALITY

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Dennis H. Treacy
Director

Francis L. Daniel
Tidewater Regional Director

Permit No.: VA0024741
Effective Date: November 2, 1999
Expiration Date: November 2, 2004

AUTHORIZATION TO DISCHARGE UNDER THE

VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM

AND

THE VIRGINIA STATE WATER CONTROL LAW

In compliance with the provisions of the Clean Water Act as amended and pursuant to the State Water Control Law and regulations adopted pursuant thereto, the following owner is authorized to discharge in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in this permit.

Owner: NASA Langley Research Center
Facility: US - NASA Langley Research Center
City: Hampton
County: N/A
Facility Location: Route 172, Hampton, VA 23681

The owner is authorized to discharge to the following receiving stream:

Stream: See Attachment I
River Basin:
River Subbasin:
Section:
Class:
Special Standards:

The authorized discharge shall be in accordance with this cover page, Part I - Effluent Limitations and Monitoring Requirements and Part II - Conditions Applicable To All VPDES Permits, as set forth herein.

Karen Jacobsen for the
Deputy Director, Department of Environmental Quality

October 29, 1999
Date

ATTACHMENT I

Outfall No(s).	Receiving Stream
001	Tides Mill Creek Basin: Chesapeake Bay, Atlantic Ocean and Small Coastal Subbasin: N/A Section: 2 Class: II Special Standard: a, NEW-20
002, 003, 008, 009 and 012	Tabbs Creek Basin: Chesapeake Bay, Atlantic Ocean and Small Coastal Subbasin: NA Section: 2 Class: II Special Standard: a, NEW-20
004, 010, and 013	Southwest Branch of the Back River Basin: Chesapeake Bay, Atlantic Ocean and Small Coastal Subbasin: N/A Section: 2 Class: II Special Standard: a, NEW-20
011	Norhtwest Branch of the Back River Basin: Chesapeake Bay, Atlantic Ocean and Small Coastal Subbasin: N/A Section: 2 Class: II Special Standard: a, NEW-20
005, 006 and 007	Brick Kiln Creek Basin: Chesapeake Bay, Atlantic Ocean and Small Coastal Subbasin: N/A Section: 2 Class: II Special Standard: a, NEW-20

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from outfall(s) serial number(s): 001 and 002 (cooling tower blowdown).

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS [a]		
	Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NA	NA	NL	1/6 Months	Estimate
pH (S.U.)	NA	NA	6.0	9.0	1/6 Months	Grab
Temperature (°C)	NA	NA	NA	32	1/6 Months	I.S.

NA = Not Applicable
NL = No limit, however, reporting is required
I.S. = Immersion Stabilization
1/6 Months = In accordance with the following schedule: 1st half (January 1 - June 30); 2nd half (July 1 - December 31).
[a] Monitoring during dry weather flow only.

2. There shall be no discharge of floating solids or visible foam in other than trace amounts.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from outfall(s) serial number(s): 003 (cooling tower blowdown and backwash brine solution from water softener process).

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS [a]		
	Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NA	NA	NL	1/6 Months	Estimate
pH (S.U.)	NA	NA	6.0	9.0	1/6 Months	Grab
Total Suspended Solids (mg/l)	NA	NA	NA	NL	1/6 Months	Grab
Temperature (°C)	NA	NA	NA	32	1/6 Months	I.S.
Total Petroleum Hydrocarbons (TPH) (mg/l)	NA	NA	NA	15	1/6 Months	Grab
Dissolved Copper (ug/l) [b]	NA	NA	NA	NL	1/6 Months	Grab
Dissolved Zinc (ug/l) [b]	NA	NA	NA	NL	1/6 Months	Grab
Total Dissolved Solids (mg/l)	NA	NA	NA	NL	1/6 Months	Grab

NA = Not Applicable
NL = No limit, however, reporting is required
I.S. = Immersion Stabilization
1/6 Months = In accordance with the following schedule: 1st half (January 1 - June 30); 2nd half (July 1 - December 31).
[a] Monitoring during dry weather flow only.
[b] See Parts I.B.4. and I.B.5. for quantification levels and compliance reporting requirements.

2. There shall be no discharge of floating solids or visible foam in other than trace amounts.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from outfall(s) serial number(s): 004 and 010 (cooling tower blowdown).

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS [a]		
	Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NA	NA	NL	1/6 Months	Estimate
pH (S.U.)	NA	NA	6.0	9.0	1/6 Months	Grab
Temperature (°C)	NA	NA	NA	32	1/6 Months	I.S.
Total Petroleum Hydrocarbons (TPH) (mg/l)	NA	NA	NA	15	1/6 Months	Grab

NA = Not Applicable
NL = No limit, however, reporting is required
I.S. = Immersion Stabilization
1/6 Months = In accordance with the following schedule: 1st half (January 1 - June 30); 2nd half (July 1 December 31).
[a] Monitoring during dry weather flow only.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from outfall(s) serial number(s): 005 (cooling tower blowdown).

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS [a]		
	Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NA	NA	NL	1/6 Months	Estimate
pH (S.U.)	NA	NA	6.0	9.0	1/6 Months	Grab
Temperature (°C)	NA	NA	NA	32	1/6 Months	I.S.

NA = Not Applicable
NL = No limit, however, reporting is required
I.S. = Immersion Stabilization
1/6 Months = In accordance with the following schedule: 1st half (January 1 - June 30) 2nd half (July 1 - December 31).
[a] Monitoring during dry weather flow only.

2. There shall be no discharge of floating solids or visible foam in other than trace amounts.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS STORM EVENT MONITORING

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from outfall(s) serial number(s) 006, 007, 011 and 012 (stormwater runoff from grassy/wooded areas).

Such discharges shall be limited and monitored by the permittee as specified below:

THESE OUTFALLS SHALL CONTAIN STORMWATER RUNOFF NOT ASSOCIATED WITH A REGULATED INDUSTRIAL ACTIVITY WHERE NO MONITORING IS REQUIRED. THERE SHALL BE NO DISCHARGE OF PROCESS WASTEWATER FROM THESE OUTFALLS.

2. There shall be no discharge of floating solids or visible foam in other than trace amounts.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from outfall(s) serial number(s): 008 (cooling tower blowdown and car wash runoff).

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS [a]		
	Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NA	NA	NL	1/6 Months	Estimate
pH (S.U.)	NA	NA	6.0	9.0	1/6 Months	Grab
Total Suspended Solids (mg/l)	NA	NA	NA	60	1/6 Months	Grab
Temperature (°C)	NA	NA	NA	32	1/6 Months	I.S.
Total Petroleum Hydrocarbons (TPH) mg/l)	NA	NA	NA	15	1/6 Months	Grab
Dissolved Copper (ug/l) [b]	NA	NA	NA	NL	1/6 Months	Grab
Dissolved Zinc (ug/l) [b]	NA	NA	NA	NL	1/6 Months	Grab

NA = Not Applicable
NL = No limit, however, reporting is required
I.S. = Immersion Stabilization
1/6 Months = In accordance with the following schedule: 1st half (January 1 - June 30); 2nd half (July 1 December 31)
[a] Monitoring during dry weather flow only.
[b] See Parts I.B.4. and I.B.5. for quantification levels and compliance reporting requirements.

2. There shall be no discharge of floating solids or visible foam in other than trace amounts.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from outfall(s) serial number(s): 009 (cooling tower blowdown and AC condensate).

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS [a]		
	Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NA	NA	NL	1/6 Months	Estimate
pH (S.U.)	NA	NA	6.0	9.0	1/6 Months	Grab
Temperature (°C)	NA	NA	NA	32	1/6 Months	I.S.
Dissolved Copper (ug/l) [b]	NA	NA	NA	NL	1/6 Months	Grab
Dissolved Zinc (ug/l) [b]	NA	NA	NA	NL	1/6 Months	Grab
Total Petroleum Hydrocarbons (TPH) (mg/l)	NA	NA	NA	15	1/6 Months	Grab

NA = Not Applicable
NL = No limit, however, reporting is required
I.S. = Immersion Stabilization
1/6 Months = In accordance with the following schedule: 1st half (January 1 - June 30); 2nd half (July 1 - December 31).
[a] Monitoring during dry weather flow only.
[b] See Parts I.B.4. and I.B.5. for quantification levels and compliance reporting requirements.

2. There shall be no discharge of floating solids or visible foam in other than trace amounts.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from outfall(s) serial number(s): 013 (tow tank overflow).

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS [a]		
	Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NA	NA	NL	1/Year	Estimate
pH (S.U.)	NA	NA	6.0	9.0	1/Year	Grab
Total Chlorine (mg/l) [b]	NA	NA	NA	NL	1/Year	Grab

NA = Not Applicable
NL = No limit, however, reporting is required
[a] Sample to be collected during tow tank overflow discharge.
[b] See Parts I.B.4. and I.B.5. for quantification levels and compliance reporting requirements.

2. There shall be no discharge of floating solids or visible foam in other than trace amounts.

B. OTHER REQUIREMENTS OR SPECIAL CONDITIONS

1 Permit Reopeners

a Water Quality Standards Reopener

Should effluent monitoring indicate the need for any water quality based limitation, this permit may be modified or, alternatively, revoked and reissued to incorporate appropriate limitations.

b. Nutrient Enriched Waters Reopener

This permit shall be modified or, alternatively, revoked and reissued to include new or alternative nutrient limitations should the State Water Control Board adopt nutrient standards for the Chesapeake Bay and tributary river basins, or if a future water quality regulation, statute, or water quality management plan requires new or alternative nutrient control.

2. Operations and Maintenance (O & M) Manual

The permittee shall review the existing O & M Manual and notify the Tidewater Regional Office (TRO), in writing, within 90 days from the effective date of the permit that it is still current. If the O & M Manual is no longer current, a revised **O & M Manual shall be submitted for approval to TRO within 90 days from the effective date of the permit.** Once approved, this manual shall become an enforceable condition of this permit. Future changes to the facility must be addressed by the submittal of a revised O & M Manual.

3 Notification Levels

The permittee shall notify the Department as soon as they know or have reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter (100 ug/l);
(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application; or
(4) The level established by the Board.

b. That any activity has occurred or will occur which would result in any discharge, on non-routine or infrequent basis, of a toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) Five hundred micrograms per liter (500 ug/l);
(2) One milligram per liter (1 mg/l) for antimony;
(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application.
(4) The level established by the Board.

4 Quantification Levels Under Part I.A.

Quantification levels shall be as follows:

Effluent Characteristic	Quantification Level
Dissolved Copper (ug/l	10.0
Dissolved Zinc (ug/l)	100.0
Total Chlorine (mg/l)	0.1

5 Compliance Reporting Under Part I.A. - Daily Maximum Limit

Compliance with the daily maximum limitations and/or reporting requirements for the paramters noted in Part I.B 4. above shall be determined as follows: The highest single value of data that is equal to or above the QL shall be reported on the DMR. If all data are less than the QL, then "<[QL]" shall be reported on the DMR, where the actual QL specified above shall be substituted for "[QL]".

6. Sampling Methodology for Specific Outfalls 001, 002, 003, 004, 005, 008, 009 and 013

The following protocol shall be adhered to when obtaining samples required by part I.A. of this permit:

a Samples at these outfalls shall be collected during times of dry-weather flow only.

b. At the time of sampling, the permittee shall ensure that the effects of tidal influences are kept to an absolute minimum. This can be achieved by:

(1 Sampling at low tide and/or

(2) Sampling at a representative point which has been demonstrated to be free of tidal influences

c In the event that sampling of an outfall is not possible due to the absence of effluent flow during a particular testing period, the permittee shall provide written notification to DEQ with the DMR for the month following the period in which samples were to be collected.

7. Cooling Water and Boiler Additives

a. If at any time during the life of this permit, the permittee decides to treat any non-contact cooling water unit(s) and/or boiler system(s) with chemical additives (with other than those additives currently in use and on file with this office), the following requirements shall be satisfied.

Thirty (30) days prior to implementing any chemical addition to the cooling water and/or boiler equipment, the permittee shall **notify the Tidewater Regional Office, in writing**, of the following:

The chemical additives to be employed and their purpose. Provide to the staff for review, a Material Safety Data Sheet (MSDS) for each proposed additive;

(2) Schedule of additive usage; and

Wastewater treatment and/or retention to be provided during the use of additives.

b Should the addition of treatment chemicals significantly alter the characteristics of the effluent from the cooling water and/or boiler unit(s) or their usage becomes persistent or continuous, this permit shall be modified or, alternatively, revoked and reissued to include appropriate limitations or conditions.

8. Materials Handling and Storage

Any and all product, materials, industrial wastes, and/or other wastes resulting from the purchase, sale, mining, extraction, transport, preparation and/or storage of raw or intermediate materials, final product, by-product or wastes, shall be handled, disposed of and/or stored in such a manner so as not to permit a discharge of such product, materials, industrial wastes and/or other wastes to State waters, except as expressly authorized.

C. TOXICS MANAGEMENT PROGRAM

1. Biological Monitoring

a. Outfalls 003, 008 and 009 samples are to be collected in accordance with Part C.2. of this permit and the schedule in C.4. below. The permittee shall conduct quarterly acute toxicity tests for one year and annual chronic toxicity tests for the duration of the permit. The acute tests will use grab samples of final effluent and shall be 48-hour static tests using Mysidopsis bahia and Cyprinodon variegatus, both conducted in such a manner and at sufficient dilutions for calculation of a valid LC_{50}. The chronic tests will use 24-hour, flow proportioned composite samples of final effluent and shall be 7-day survival, growth and fecundity static renewal tests using M. bahia. The chronic tests shall be conducted in such a manner and at sufficient dilutions to determine the "No Observed Effect Concentration" (NOEC) for survival and reproduction or growth.

b. Technical assistance in developing the procedures for these tests shall be provided by the Department, if requested by the permittee. As long as the permittee utilizes the currently approved laboratory and their approved protocols, no protocol approval action is necessary. However, if the permittee changes laboratories, or sampling or testing procedures, test protocols must be submitted for approval at least two months prior to that change.

c. Following completion of the quarterly testing of outfalls 003, 008 and 009 as in 1.a. above, the permittee shall continue acute testing of the outfall annually. The first annual test shall be conducted according to the schedule in C.4. below. The test organisms shall be those identified as the most sensitive species from the quarterly acute tests or an alternative species approved by DEQ staff. Annual testing of the outfall is not required in cases where the need for a TRE of the outfall has been established.

d. If, in the testing according to 1.a. or 1.c. above, any of the annual acute toxicity tests yields an LC_{50} of less than 100% effluent or any annual chronic toxicity test yields an NOEC of less than the Instream Waste Concentration (IWC) as given in 1.f.(2)(i) below, the test shall be repeated within three months from the date the failed test sample was taken. If there is no discharge during this three month period, a sample must be taken during the first subsequent discharge.

(1 If the retest also indicates an LC_{50} of less than 100% effluent or an NOEC of less than the IWC, quarterly toxicity testing as in 1.e. below shall commence

within three months. The results of these tests will be included in the evaluation of the need for toxicity reduction.

(2) If the retest does not confirm the results of the first test, then annual testing in accordance with the annual compliance schedule shall resume.

e. If required in 1.d.(1) above, the permittee shall conduct quarterly acute and/or chronic toxicity tests for a period of one year. The acute tests will use grab samples, and the chronic tests will use 24-hour, flow proportioned composite samples, of final effluent from any outfall which failed its retest. The acute tests shall be 48-hour static tests using Mysidopsis bahia and Cyprinodon variegatus, both conducted in such a manner and at sufficient dilutions for calculation of a valid LC_{50}. The chronic tests shall be static renewal tests using M. bahia and C. variegatus. The M. bahia test shall be a 7-day survival, growth and fecundity test and the C. variegatus test shall be a 7-day larval survival and growth test. These chronic tests shall be conducted in such a manner and at sufficient dilutions to determine the NOEC for survival and reproduction or growth. The permittee may provide additional samples to address data variability during the one-year period of initial data generation. These data will be included in the evaluation of effluent toxicity. The results of all such additional analyses shall be reported.

f. The following criteria shall be used in evaluating the quarterly toxicity test data generated in 1.a. above, and semiannual toxicity test data generated in 1.e. above:

(1) LC_{50} greater than or equal to 100% effluent in six of the total of eight acute toxicity tests, or in at least 75% of the tests conducted, if more than eight tests are conducted, and

(2) NOEC greater than or equal to the IWC as given in (i below, in six of the total of eight chronic toxicity tests, or in at least 75% of the tests conducted if more than eight tests are conducted.

(i All Outfalls: IWC = 2%

g. If, prior to completing the monitoring requirements specified in 1.e. above, it is determined that a particular outfall's effluent fails the decision acute and/or chronic criteria outlined in 1.f., a TRE may be required. Upon notification by the DEQ staff that a TRE is required, the permittee shall initiate a TRE and may discontinue the acute and/or chronic toxicity tests for that particular outfall.

h. Following completion of the quarterly testing of an outfall as in 1.e. above, the permittee shall resume acute

and chronic toxicity testing of the outfall annually. The first annual test shall be conducted according to the schedule in C.4. below. The test organisms shall be those identified as the most sensitive species from the semiannual acute and chronic tests or an alternative species approved by DEQ staff. Annual testing of the outfall is not required in cases where the need for a TRE of the outfall has been established.

i. If, in the testing according to C.1., any toxicity tests are invalidated, the tests shall be repeated within the testing period that the original test was taken, or if already past that period, within thirty (30) days of notification. If there is no discharge during this 30 day period, a sample must be taken during the first subsequent discharge.

2. Effluent Sampling Procedures

a. Sampling of all outfalls will occur during dry periods, when no rain is contributing to the discharge.

(1 Grab samples at outfall 003 will occur during periods when water softener backwash brine solution contributes to the final discharge.

3. Toxicity Reduction Evaluation

a. If the results of this Toxics Management Program or other available information indicate that the wastewaters are actually or potentially toxic, the permittee shall submit

(1 a Toxicity Reduction Evaluation (TRE) plan, or

(2) at the permittee's option, an instream impact study plan, and

(3) an accompanying implementation schedule

within 120 days of the notification of such a determination by the DEQ.

b. The requirement of this plan shall be to

(1) assure the absence of actual or potential toxicity or

(2) to demonstrate that there is, or would be, no adverse impact from the discharge on all reasonable and beneficial uses of the State's waters.

c. Upon completion of the review of the plan, the permittee shall implement the plan and the permit may be modified or, alternatively, revoked and reissued in order to reflect appropriate permit conditions and a compliance schedule. These conditions may include pollutant specific limits in lieu of a WET limit should it be demonstrated

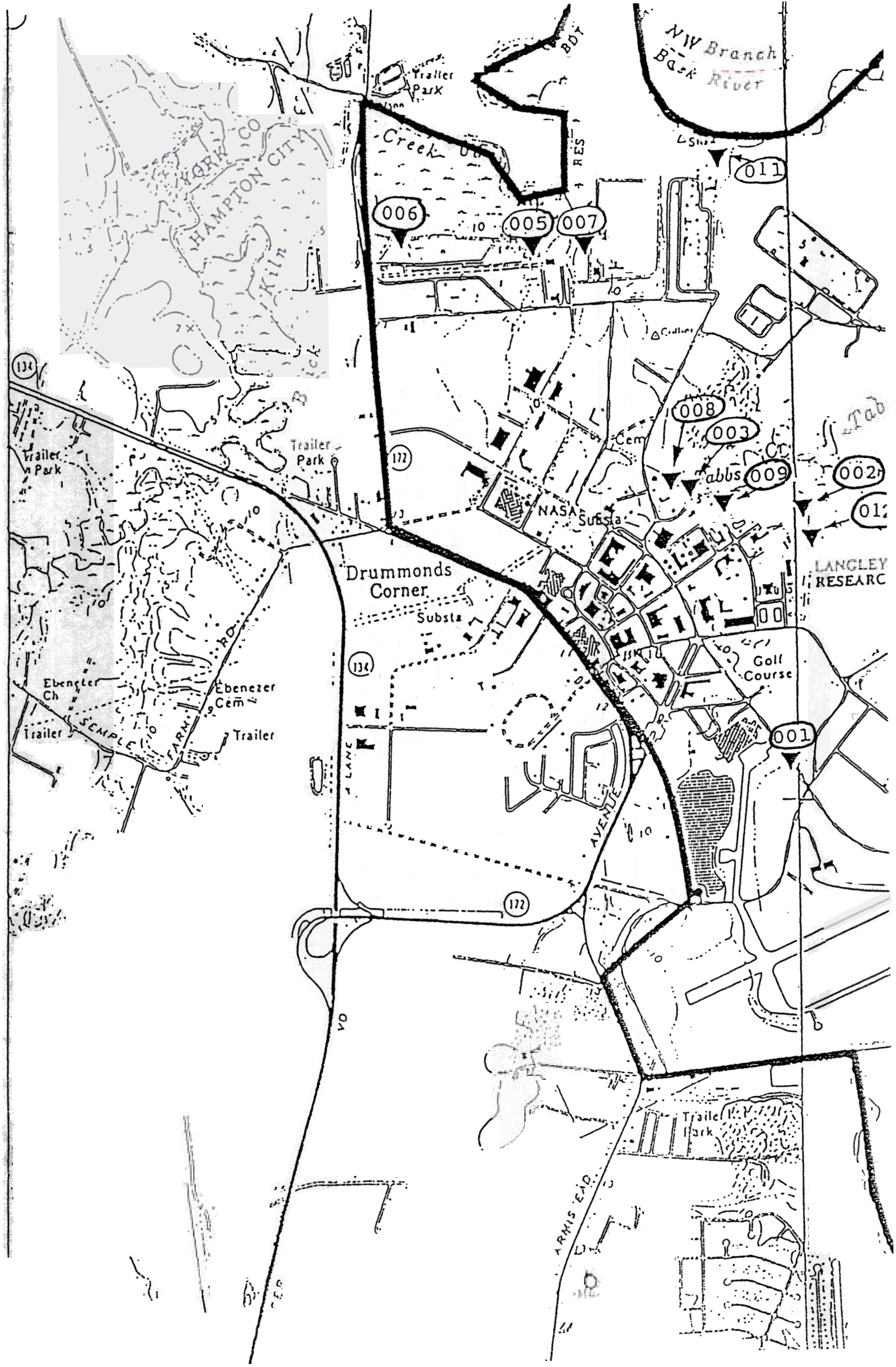
that toxicity is due to specific parameters. The pollutant specific limits must control the toxicity of the effluent.

4. Reporting Schedule

Each toxicity test report submitted in accordance with this Toxics Management Program shall identify the specific quarterly and/or annual period represented. The permittee shall submit the results of the toxicity tests in accordance with the following schedule (submit one complete copy of these reports to the Tidewater Regional Office):

(a)	Submit toxicity test protocols for approval if necessary	By December 10, 1999
(b)	Conduct first quarterly acute (*M. bahia* and *C. variegatus*) and first annual chronic biological test (*M. bahia*) at outfalls 003, 008 and 009	By December 31, 1999
(c)	Submit results of all biological tests	With the Discharge Monitoring Report (DMR) received by January 10, 2000
(d)	Conduct second quarterly acute (*M. bahia* and *C. variegatus*) at outfalls 003, 008 and 009	By March 31, 2000
(e)	Submit results of all biological tests	With DMR received by April 10, 2000
(f)	Conduct third quarterly acute (*M. bahia* and *C. variegatus*) at outfalls 003, 008 and 009	By June 30, 2000
(g)	Submit results of all biological tests	With DMR received by July 10, 2000
(h)	Conduct fourth quarterly acute (*M. bahia* and *C. variegatus*) at outfalls 003, 008 and 009	By September 30, 2000
(i)	Submit results of all biological tests	With DMR received by October 10, 2000
(j)	Conduct annual acute & chronic biological test at all outfalls	By December 31, 2000

(k)	Submit results of all biological tests	With DMR received by January 10, 2001
(l)	Conduct subsequent annual acute and chronic biological tests at all outfalls	By December 31, 2001, 2002, 2003
(m)	Submit results of subsequent annual biological tests	With the (DMR) received by January 10, 2002, 2003, 2004


NW Branch
Back River
Trailer Park
Creek
BDY
RES
006
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YORK CO
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Trailer Park
Trailer Park
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008
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012
Cem
NASA
Substa
LANGLEY RESEARC
Drummonds Corner
Substa
134
Golf Course
001
Ebenezer Ch
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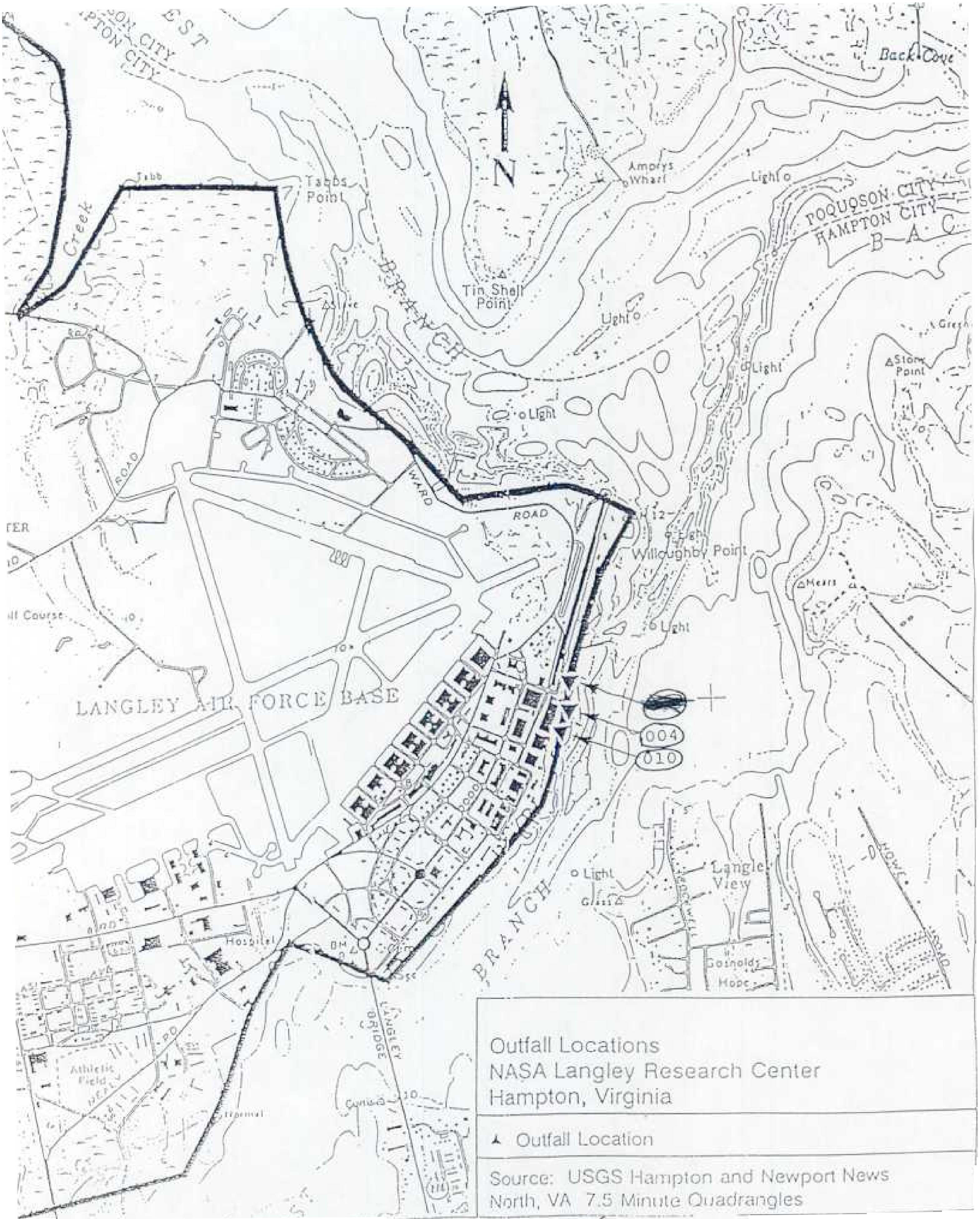
Trailer
SEMPLE
FARM RD
LANE
AVENUE
172
Trailer Park
ARMISTEAD

WEST SIDE


Outfall Locations
NASA Langley Research Center
Hampton, Virginia
Outfall Location
Source: USGS Hampton and Newport News North, VA 7.5 Minute Quadrangles
LANGLEY AIR FORCE BASE
Tabbs Point
Tin Shell Point
Amorys Wharf
Back Cove
POQUOSON CITY
HAMPTON CITY
Willoughby Point
Langley View
Gosnolds Hope
Hospital
Athletic Field
LANGLEY BRIDGE
BRANCH
ROAD
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EAST SIDE